



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**



DOT HS 809 024

February 2000

Evaluation of New Mexico's Anti-DWI Efforts

Technical Report Documentation Page

1. Report No. DOT HS 809 024	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Evaluation of a New Mexico's Anti-DWI Efforts		5. Report Date February 2000	
		6. Performing Organization Code	
7. Author(s) Lacey, J H; and Jones, R K		8. Performing Organization Report No.	
9. Performing Organization Name and Address Mid-America Research Institute 611 Main Street Winchester, MA 01890		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTNH22-93-D-05018	
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration Office of Research and Traffic Records 400 7 th Street, S.W. Washington, DC 20590		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract This study is an assessment of the effects of the introduction of omnibus anti-DWI legislation in New Mexico. Several changes to New Mexico's DWI laws were introduced in the later half of 1993 and the beginning of 1994. New Mexico further initiated an extensive statewide DWI checkpoint initiative in December 1993. Though the specific effect of each individual component on alcohol-related crashes could not be discerned because of multiple, simultaneous interventions, time series analyses indicated an overall reduction on the order of 19% in drunk driving fatal crashes (a crash where one of the involved drivers had a BAC of .10 or more) when the period December 1993 through 1995 is compared with January 1988 through November 1993. Crash trends in five neighboring states were examined as a comparison and no such reduction was observed.			
17. Key Words DWI, impaired drivers, laws, checkpoints, roadblocks, program evaluation		18. Distribution Statement This report is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161 (703) 605-6000. It is also available, free of charge, on the NHTSA web site at www.nhtsa.dot.gov .	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 19	22. Price

ACKNOWLEDGMENTS

The authors wish to acknowledge the encouragement and assistance of Steven Flint and Donna Dossey, successive Directors of the New Mexico Traffic Safety Bureau.

Stuart Castle and Brian Woods of the Office of Epidemiology, Public Health Division, New Mexico Department of Health were most helpful in sharing their knowledge and insights about the conduct of this study. David Hanna of the Department of Finance and Administration, Local Government Division offered valuable comments.

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EXECUTIVE SUMMARY

This report summarizes the results of a project designed to describe and evaluate a major change in the anti-DWI (Driving While Intoxicated) laws in New Mexico. Coincident with the implementation of the legislative changes, which generally had effective dates in early 1994, the New Mexico Traffic Safety Bureau of the State Highway and Transportation Department used both state and federal money to fund dramatic increases in DWI enforcement through the implementation of periodic statewide checkpoint blitzes accompanied by extensive public information and education efforts.

The initial intent was to assess the effects of the legislative changes. However, because the legislative changes were multi-faceted and were implemented at essentially the same time, and because a dramatic enforcement effort was also initiated at that time, one cannot discern the effects of individual countermeasures.

Thus the analyses conducted were able to focus only on the overall effect of the combined legislative and enforcement program combined with extensive funding for state and local agencies to support and coordinate anti-DWI activities. These analyses revealed a reduction in alcohol-related fatalities on the order of 19%. Crash data from 1988 through 1995 were examined with the intervention point set at December 1, 1993, for the purpose of this analysis.

Surveys of licensed drivers at that time revealed high levels of perceived risk of arrest and awareness, particularly of DWI checkpoint enforcement efforts.

1 - INTRODUCTION

This report summarizes the results of a project designed to describe and evaluate several changes in New Mexico's anti-DWI (Driving While Intoxicated) laws, which were implemented in late 1993 and 1994. The project was conducted for the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-93-D-05018, Task Order Number 2. The objective of this project was to describe changes in New Mexico's Anti-Drunk Driving Legislation and DWI enforcement through checkpoints which took place in late 1993 and early 1994, and to assess the results of those changes on alcohol-related crashes.

BACKGROUND

New Mexico has had a long history of high rates of alcohol-related fatal crashes. In fact, for the past few decades they have led the nation in this regard. This is despite the fact that they have attempted to address the problem through legislation, education and enforcement. In 1993, omnibus legislation was passed to further strengthen New Mexico's DWI laws and anti-DWI environment. This study was initially intended to assess the extent to which those legal changes had served to reduce alcohol-related fatalities. However, for the reasons described below, the focus of the study was modified to some extent.

There are inherent difficulties in evaluating comprehensive legislative initiatives in this regard. They include the near impossibility of discerning the effect of any one part of the initiative because so many different changes are occurring at once. In fact, it is theoretically possible that one component may have a deleterious effect that goes unnoticed because of the countervailing beneficial effects of other component. The converse is also true.

In New Mexico, this evaluation problem was compounded by the implementation of a long series of bimonthly DWI checkpoint blitzes accompanied by widespread publicity. Checkpoints are known to be effective in decreasing alcohol-related crashes (Lacey, Jones, and Smith, 1999), thus making it even more problematic to attribute reductions to specific legislative initiatives. Essentially, the authorities in New Mexico were making every effort to reduce alcohol-related through a multi-faceted state and local effort. This approach is entirely appropriate, it just makes it difficult to identify the contribution of individual components of the program.

Nonetheless, an evaluation of the overall effect of the combined legislative and enforcement initiatives is feasible and is thus the subject of this report.

ORGANIZATION OF THE REPORT

A detailed description of the intervention appears in Chapter 2. Chapter 3 describes the design and results of the evaluation, and Chapter 4 presents the overall conclusions of the project. A listing of pertinent reference material follows in Chapter 5.

2 - DESCRIPTION

The essential changes in New Mexico which occurred in 1993 and 1994 and which are the subject of this study are:

- *Lowering of the blood alcohol concentration (BAC) per se and presumptive limit for adults from .10 to .08.*

The definition was also changed to include breath as well as blood alcohol. The law now allows an officer to request both a blood and breath test. It also requires the officer to advise offenders of their right to have an independent test and the police department's obligation to pay for it.

(Effective date: 1-1-94)

- *Lowering of the BAC per se and presumptive limits for persons under 21 from .05 to .02 ("Zero tolerance" legislation).*

Prior to the new legislation the limit was .05 and only applied to persons 18 and under.

(Effective date: 1-1-94)

- *A general increase in the severity of the sentencing guidelines for DWI*

Overall penalties were increased. However, the law does allow a limited license for first offenders after a 30-day hard suspension rather than the previous 90-day hard suspension. Persons who refuse the BAC test are not allowed limited privileges and receive a one year revocation.

(Effective date: 1-1-94)

- *Creation of a new offense of aggravated DWI*

Offenders with BAC over .15 or who caused bodily injury to someone else or refused the BAC test are subject to additional mandatory jail terms.

(Effective date: 1-1-94)

- *Increase the penalties for driving while licensed revoked for DWI*

This change calls for a mandatory seven consecutive days of incarceration and a \$300-1,000 fine. It shifts the burden of proof for disputing notice of the original revocation to the defendant.

(Effective date: 1-1-94)

- *Provide for a \$25 fee to request a hearing disputing an implied consent offense administrative revocation.*

This is intended to discourage nuisance requests for hearings which are often made in the hope that the arresting officer will not attend resulting in the revocation being dismissed.

(Effective date: 1-1-94)

- *Make the Metropolitan Court in Albuquerque a court of record for DWI cases.*

This is intended to avoid the necessity of trial de novo on appeal from this largest court in the state. The sum of \$776,000 was appropriated to help implement this change.

(Effective date: 1-1-94)

- *Sworn police officer statements revoking licenses of implied consent offenders need no longer be notarized.*

This is a change intended to make paperwork for police officers somewhat easier to handle.

(Effective date: 1-1-94)

- *Increases on taxes for all forms of alcoholic beverages*

These increases were anticipated to generate an additional \$11 million per year which goes to the general fund. This additional revenue was used to justify funding significant alcohol related programs. The increase was phased in.

(Effective dates: 7-1-93 and 7-1-94)

- *Increase special dispenser permit fees (special permits for parties and special events).*

Fees for these limited alcohol dispenser permits increased from a range of \$10-20 to \$50-75. The fees are collected by local governing bodies and may be used to provide free or reduced-price rides for impaired persons.

(Effective date: 7-1-93)

- *Increase fines and penalties for service to minors*

(Effective date - 7-1-93)

- *Require alcohol server education*

This provision requires liquor licensees to establish and implement certified server training programs.

(Effective date: 7-1-95)

- *Create a local DWI grant fund*

This fund of \$5.5 million is used to fund innovative local anti-DWI and alcohol abuse programs in communities that develop a plan and make appropriate applications. An additional \$5.0 million was appropriated in a subsequent year. These funds were used to pay the salaries of local DWI coordinators in each of the State's 33 counties as well as other initiatives. Local task forces were created which included representatives of local and tribal government to plan and coordinate local anti-DWI activities.

(Effective date: 7-1-93)

- *Create a DWI program fund*

This fund of \$5.1 million is intended to fund statewide programs dealing with alcohol problems including DWI. Uses included: increased funding to the courts, prosecutors and public defenders for anticipated workload increases; funding for DWI education, awareness and information programs; funding for enforcement of the Liquor Control Act and the Server Education Act; funding to the Department of Health for development of a statewide DWI prevention program; as well as funding to the Drug Free Schools and Communities Program for DWI prevention and education in the public

schools. In subsequent years, funding for these statewide activities was incorporated into each department's operating budget.

(Effective date: 1-1-94)

- *Require DWI education before receiving driver licenses*

This provision requires the public schools to provide drivers education which includes DWI education and requires completion before licensure. Additionally, older persons obtaining their first New Mexico driver license must attend a special two hour course.

(Effective date: 7-1-95)

- *Implementation of statewide sobriety checkpoint blitzes*

The Traffic Safety Bureau funded overtime, equipment and extensive PI&E for a series of statewide DWI checkpoint blitzes which resulted in 910 checkpoints between December 1993 and December 1995. These blitzes were accompanied by extensive publicity.

(Effective date: 12-1-93)

- *Renewed efforts to reduce sales to minors*

The Traffic Safety Bureau conducted training and funded overtime pay for law enforcement officers to implement "Cops in Shops" programs in communities throughout the State. Under "Cops in Shops" programs, undercover officers are used to identify and arrest minors attempting to purchase alcoholic beverages.

(Effective date: 3-16-94)

These legislative and enforcement changes were implemented in a highway safety environment that has a long history of innovative change. New Mexico was one of the early states to adopt administrative licence revocation (ALR). New Mexico's ALR law went into effect in June 1984. New Mexico was also one of the first States to adopt mandatory safety belt use laws. These interventions have resulted in a gradual decline in New Mexico's alcohol-related fatal crashes.

Nonetheless, even with that progress, in 1993 New Mexico still had an alcohol-related crash rate well above the national average. In fact, in 1993, 48.0% of fatal crashes in New Mexico involved at least one person with a BAC of .10 or greater.

The corresponding figure for the nation as a whole was 34.9%. New Mexico's recent effort to further reduce alcohol-related crashes is the subject of this study.

3 - EVALUATION

APPROACH

In New Mexico a comprehensive, multifaceted intervention, combining legislation and enforcement was implemented in late 1993 and early 1994 (essentially simultaneously). Consequently the analyses for this study have focused on the combined effect of these interventions on alcohol-related fatalities. This analysis of fatal crashes is supplemented by an examination of statewide surveys, which primarily focused on the public's awareness of the statewide DWI Checkpoint enforcement blitz. These surveys were conducted under the auspices of the State of New Mexico and were provided to us to allow us to supplement the findings of the fatal crash analyses.

PROGRAM IMPACT

Experimental Design

An interrupted time series approach was used in analyzing the traffic safety impact of the overall program. In this approach, a time series of the data of interest is studied to see if an "intervention" occurring at some point in the series is a statistically significant factor in a mathematical model of the series. The intervention analyzed here is the implementation of the statewide checkpoint program, which was immediately followed by the effective date of the majority of the legislative changes. Thus we used December 1, 1993 as the intervention point.

The dependent variable and measure of effectiveness in the model was "drunk driving fatal crashes." A drunk driving fatal crash was defined as a fatal crash in which one of the involved drivers had a blood alcohol concentration (BAC) of .10 or more, either through direct BAC test results or through an algorithm developed by NHTSA (Klein, 1986). Ideally, all classifications would be through direct BAC tests, however, no State as yet obtains a BAC test of all drivers in fatal crashes and this approach is considered to be the best available alternative. The data used in the model were retrieved from NHTSA's Fatality Analysis Reporting System (FARS). (The FARS was formerly known as the Fatal Accident Reporting System.) The data covered the period 1988 through 1995.

Two techniques were used to guard against attributing any changes in drunk driving fatal crashes to the program when they might have been due to some other events that just happened to coincide with its implementation. First, a model of drunk driving fatal crashes grouping the five states surrounding New Mexico (Arizona, Oklahoma, Texas, Colorado and Nevada) was developed using the same

procedures to see if an effect occurred coincident with the New Mexico intervention. Such an effect might be indicative of a regional or, possibly, a national factor having nothing to do with the intervention. All fatal crashes were also included as an explanatory variable in the model for New Mexico and the model for the five surrounding States.

Nominally, the statistical analysis assumed a program start date of December 1, 1993, but we also studied the effect of assuming several other start dates to account for a possible lag between the time the program was started and the time an impact occurred. It was assumed that a step-function intervention was appropriate for the majority of the analyses, and the effect of interventions of other time profiles; for example, a ramp function, was studied.

The ARIMA analysis method developed by Box and Jenkins in the 1970s, and incorporated in the SAS® statistical package as PROC ARIMA, was used.

The best fit to the New Mexico series was obtained through a model using all drunk-driving (.10 or above) fatal crashes as the dependent variable. All fatal crashes were used as an input series. The transfer function for the input series was a simple scalar of value equal to 1. *The model showed a near significant effect for the intervention variable (a step function coincident with the overall program start date) amounting to a reduction of drunk-driving fatal crashes per month by 19.25% (t ratio=-1.85).* This was a dramatic reduction over the projected number of drunk-driving fatal crashes that would have occurred with no intervention. The results are depicted graphically in Figure 1.

The model for the comparison series used 12-span differencing of the dependent variable (drunk-driving fatal crashes), and used the same differencing of the independent variable (all fatal crashes). Again, the transfer function was equal to 1. The model showed a smaller, insignificant 3.52% decrease in drunk-driving fatal crashes in the other states coincident with the New Mexico intervention (t ratio=-1.06, Figure 2), lending support to the hypothesis that the overall program was responsible for the positive results observed in New Mexico.

Figure 1: ARIMA Model of Drunk-Driving Fatal Crashes in New Mexico, All Fatal Crashes as an Explanatory Variable

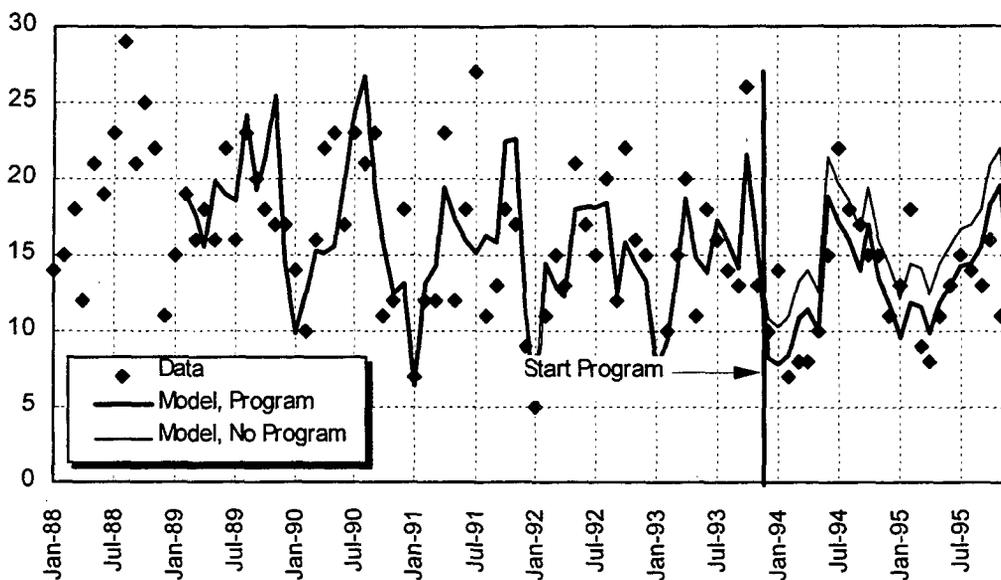
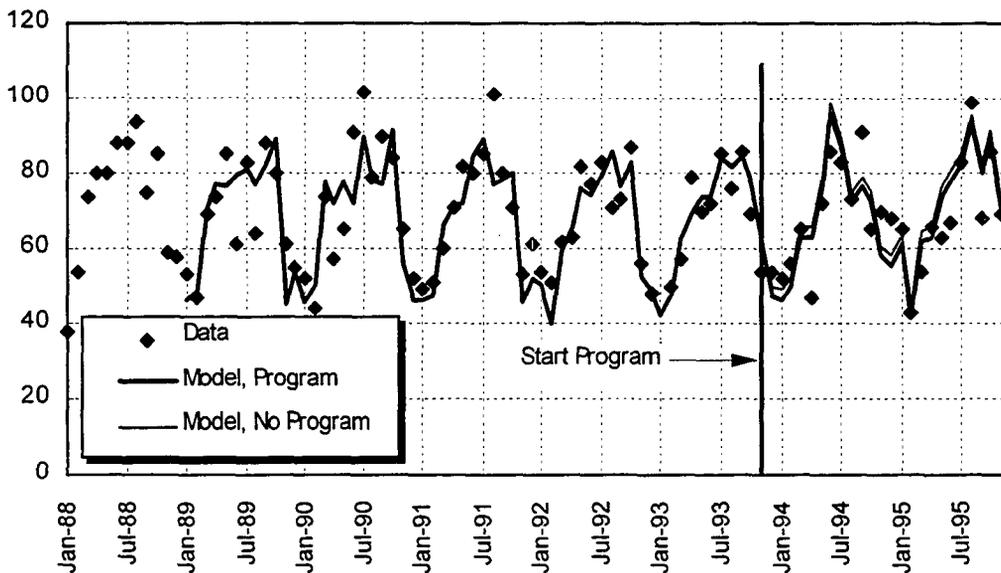


Figure 2: ARIMA Model of Drunk-Driving Fatal Crashes in Five Comparison States, All Fatal Crashes as an Explanatory Variable



DWI Awareness Survey

As a separate activity funded by the State of New Mexico, a telephone survey of New Mexico residents was conducted in December 1993 (as checkpoints were first being implemented and before many aspects of the law were implemented, but subsequent to the initiation of much of the publicity surrounding those events), March of 1994 and August of 1994 (subsequent to initiation of enforcement activity and implementation of legislative initiatives). The survey, developed in English, was also translated into Spanish and Spanish-speaking interviewers were available so that respondents could be interviewed in the language with which they were most comfortable. In each wave, responses were sought from approximately 600 individuals (400 male, 200 female). Males were over sampled because of the over representation in alcohol-related crashes. Actual sample sizes by age and gender appear in Table 1.

Table 1: Questionnaire Sample Size

Group	Wave		
	Fall 1993	Spring 1994	Fall 1994
Male:			
18-34	137	126	121
35-97	258	267	278
Total	395	393	399
Female:			
18-34	62	63	49
35-97	136	134	147
Total	198	197	196

The information available from this survey is limited to summaries of responses to questions within each gender.

One question asked was "In the past year, when you were driving, how many times have you been stopped at a police checkpoint where they were looking for alcohol use or drunk driving?" In the first wave, 18.7% of women responded that they had been stopped one or more times. In the two subsequent waves, 24.0% and 24.9% responded that they had been stopped one or more times. Thus, there seems

to have been an increase in reported exposure of female drivers to checkpoints coincident with implementation of the program.

Male drivers started out with a higher level of exposure (34.3% at the time of the first wave), and this level of exposure essentially did not change over the course of the study (32.2% at Wave 2 and 34.2% at Wave 3). One candidate explanation for the somewhat different pattern between the two genders is that perhaps women were asked to drive as designated drivers more frequently after initiation of the program.

Another question asked was "In New Mexico, how likely do you think it is for a drunk driver to be stopped by a police officer?" In the first wave, 24.1% of female respondents indicated that it was almost certain or very likely. That figure rose to 27.1% at the second wave and 33.9% at the third. For men, the value was 24.4% for Wave 1, 27.6% for Wave 2 and 19.6% for Wave 3. Thus the perceived risk of arrest for women gradually increased, while that of men fluctuated.

Respondents were then asked if they thought the chances of a drunk driver being stopped had changed in the past year and in what direction. At Wave 1, 47.1% of women felt it had increased, 61.8% at Wave 2 and 69.6% at Wave 3. For men, the corresponding figures were 60.1%, 57.9% and 69.6%. Thus, both groups' perceptions enforcement intensity increased, with that for women being more dramatic.

A series of questions were asked about the likelihood that convicted drunk drivers would receive certain sanctions. The first such question was about losing his or her driver's license. Nearly a third (31.3%) of women felt that sanction was almost certain or very likely to be imposed when queried at Wave 1. That value increased to 38.4% at Wave 2 and 37% at Wave 3. For men, the corresponding figures were 37%, 44.1% and 39.1%. Thus, for this sanction, men's perceptions of certainty of imposition started out higher, but did not change much while women's started lower and changed to the level initially held by men.

When asked about the likelihood that convicted drunk drivers would be required to pay a stiff fine, 46% percent of women felt it was very likely or almost certain at Wave 1. At Waves 2 and 3, that figure was 44.4% and 44.6% respectively. For men, the figures were 45.4%, 52.1% and 45.8% At each of the three waves with the exception of a higher value for men for Wave 2, both men and women held fairly consistent views over time about the likelihood of a stiff fine.

Both women and men were less likely to feel that serving jail time was very likely or almost certain than for the other sanctions. The values for women were 23.8%, 23.7% and 27.3% for Waves 1, 2 and 3, respectively. For men, those values were 21.3%, 28.8% and 21.1%.

Few of the respondents felt that convicted drunk drivers would receive no sanctions. At Wave 1, 22.7% of women felt that it was very likely or almost certain that a drunk driver would receive no sanction, 15.7% at Wave 2 and 14.4% at Wave 3. Corresponding figures for men were 18.5%, 18.3% and 12%. Thus both groups were becoming more confident that sanctions were being applied.

Self-reported drinking driving behavior was measured by asking "In the past year, about how many times have you driven within two hours after drinking any type of alcohol, even as much as one drink?" More men than women would admit to this behavior, but there was little change in either group over time. A total of 21% of women admitted to having done so at Wave 1, 17.5% at Wave 2 and 19.9% at Wave 3. For men those figures were 36.9%, 38.1% and 41.4%.

On the 3rd wave of the survey, a question asking respondents whether they had heard of a program called "Operation DWI" was added to the instrument. Over two thirds (67.7%) of women reported they had, compared to 60.4% of men. At that point, 39% of men and 20% of women reported having actually passed through a checkpoint.

In general, there was little movement on any of the survey measures of perception of risk, sanction certainty or reported drinking driving behavior. However, for most measures, what little movement that did occur was in the desired direction.

DISCUSSION

Though the reductions in fatal crashes in New Mexico were dramatic (over 19%), they were not statistically significant at the .05 level. This is because, though New Mexico is geographically a large state, its population is relatively small and the small sample size requires large absolute reductions to achieve statistical significance.

Survey results indicate a slightly heightened perception of both risk of arrest and severity of sanction and a awareness of DWI checkpoint efforts. These patterns are in concert with the reductions in alcohol-related fatalities observed through the fatal crash analyses.

4 - CONCLUSIONS AND RECOMMENDATIONS

The focus of this study was to examine the overall effects of comprehensive changes in New Mexico's impaired driving and alcohol control laws, coupled with a statewide DWI checkpoint program.

Several changes in the laws were enacted and implemented, including a lowering of the per se level for adults from .10 to .08 and for minors from .05 to .02. Sanctions were made more severe, measures were implemented to encourage more responsible alcoholic beverage serving practices, and the taxes on alcoholic beverages were increased. Coupled with this, the State implemented a statewide DWI checkpoint program which resulted in over 900 checkpoints being held in the State in the first two years of implementation.

Crash analyses indicted a fairly dramatic reduction in alcohol-related fatal crashes of 19.25%. However this does not reach statistical significance because of the relatively small sample size provided by a state as sparsely populated as New Mexico. Nonetheless, a reduction on the order of 20%, if continued, is certainly desirable.

Surveys of the driving public conducted for the State of New Mexico indicated a slightly heightened awareness of more severe sanctions and of the enforcement efforts. The perceived risk of arrest increased somewhat and by the fall of 1994, 39% of men and 20% of women actually reported having been through a sobriety checkpoint. An even larger percentage reported awareness of the checkpoint enforcement program.

Through the efforts noted in this report, New Mexico is reducing its alcohol-related fatal crash rate and is now closer to the national average. In 1997, 35.7% of New Mexico's fatal crashes involved at least one person with a BAC of .10 or greater, compared with the national figure of 30.3%. This is a marked improvement over the corresponding figures of 48.0% and 34.9% from 1993.

Other states should consider the multi-faceted approach to reducing alcohol-related crashes that New Mexico has adopted.

5 - REFERENCES

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DOT HS 809 024
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